

No. 715,073.

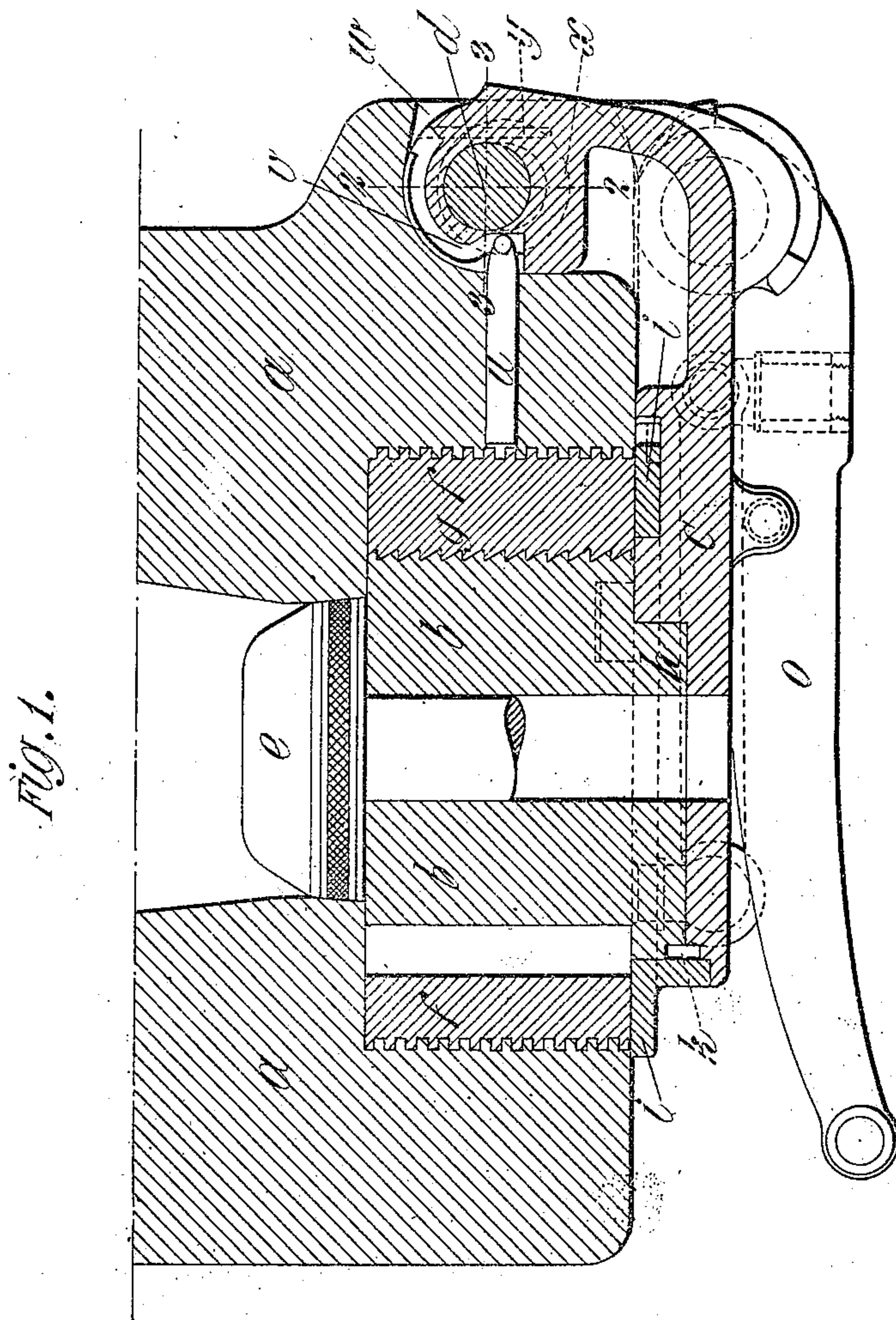
Patented Dec. 2, 1902.

C. HOLMSTRÖM.
BREECH MECHANISM FOR GUNS.

(Application filed Aug. 23, 1901.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses:

E. A. Allen

A. L. Hodgdon,

Inventor:

Carl Holmström,

by his attorney

Charles F. Richardson

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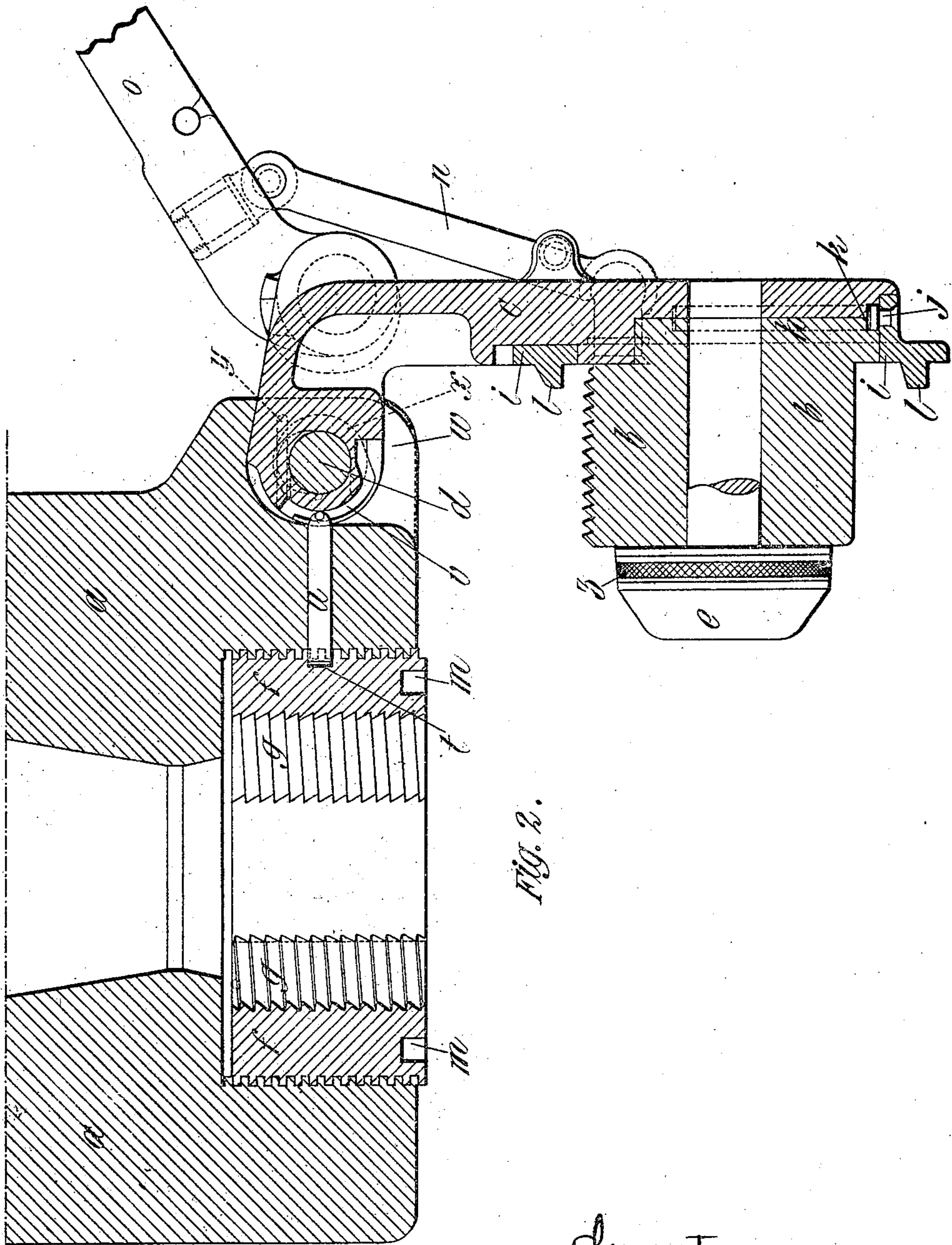


Fig. 2.

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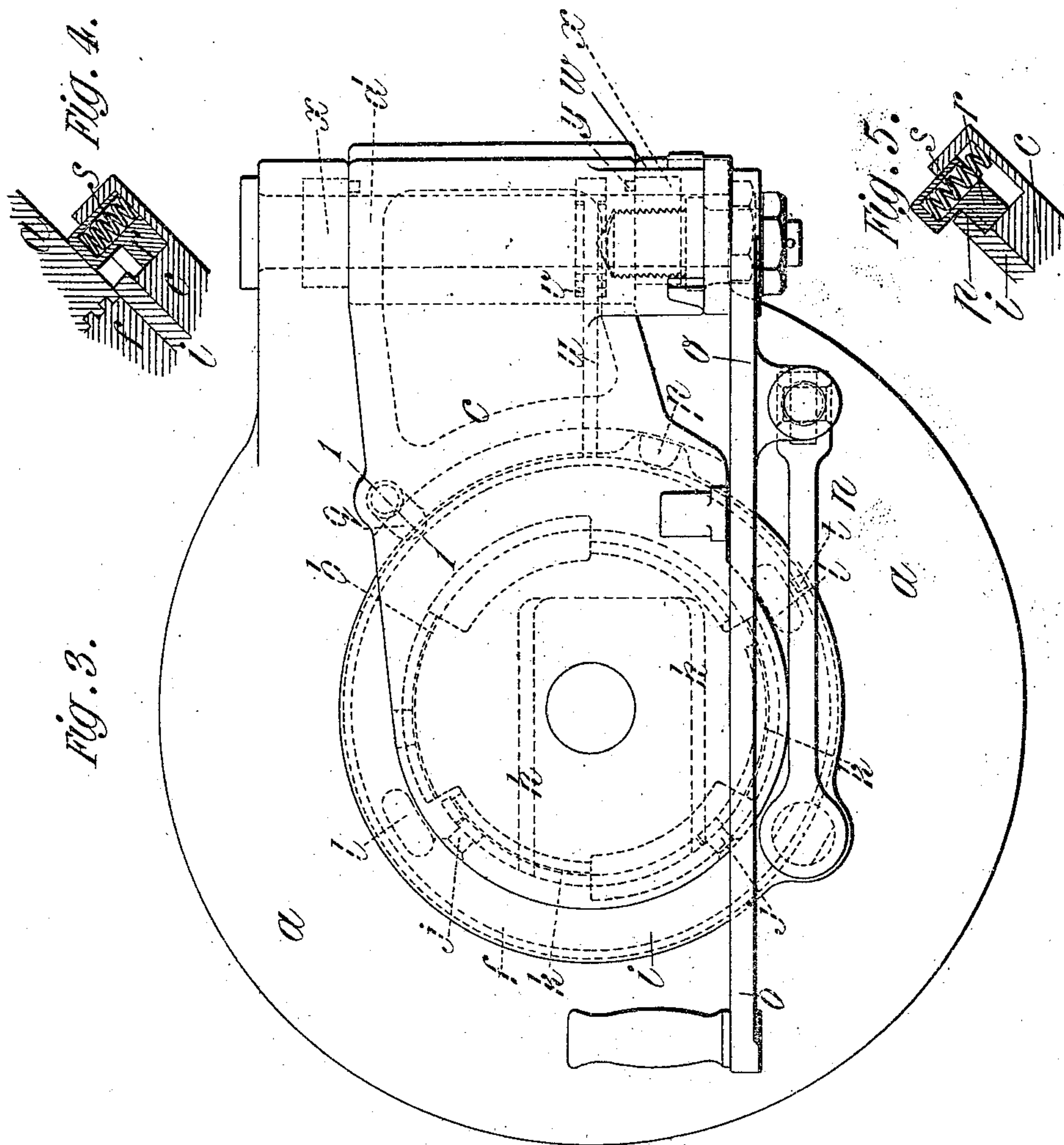
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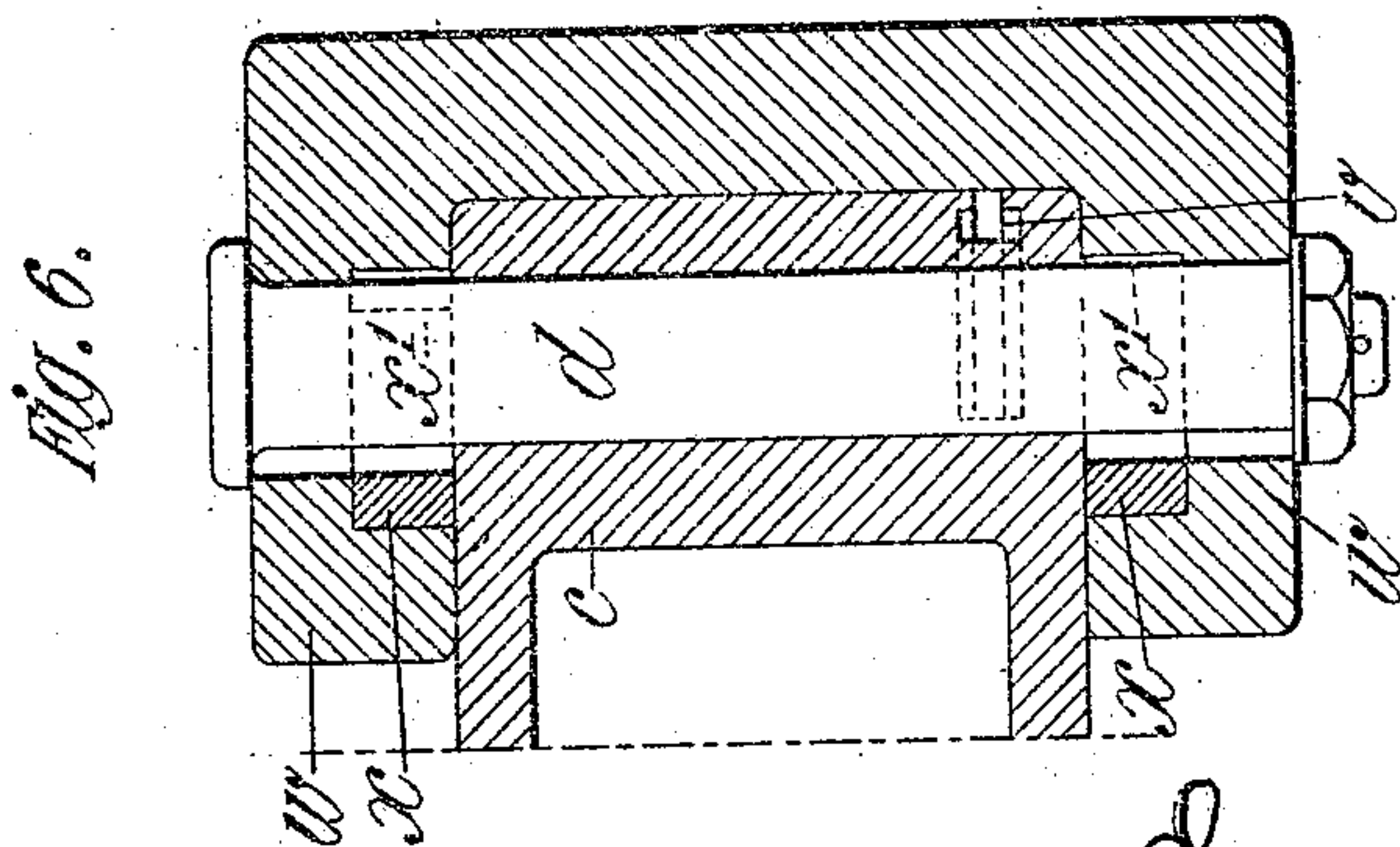
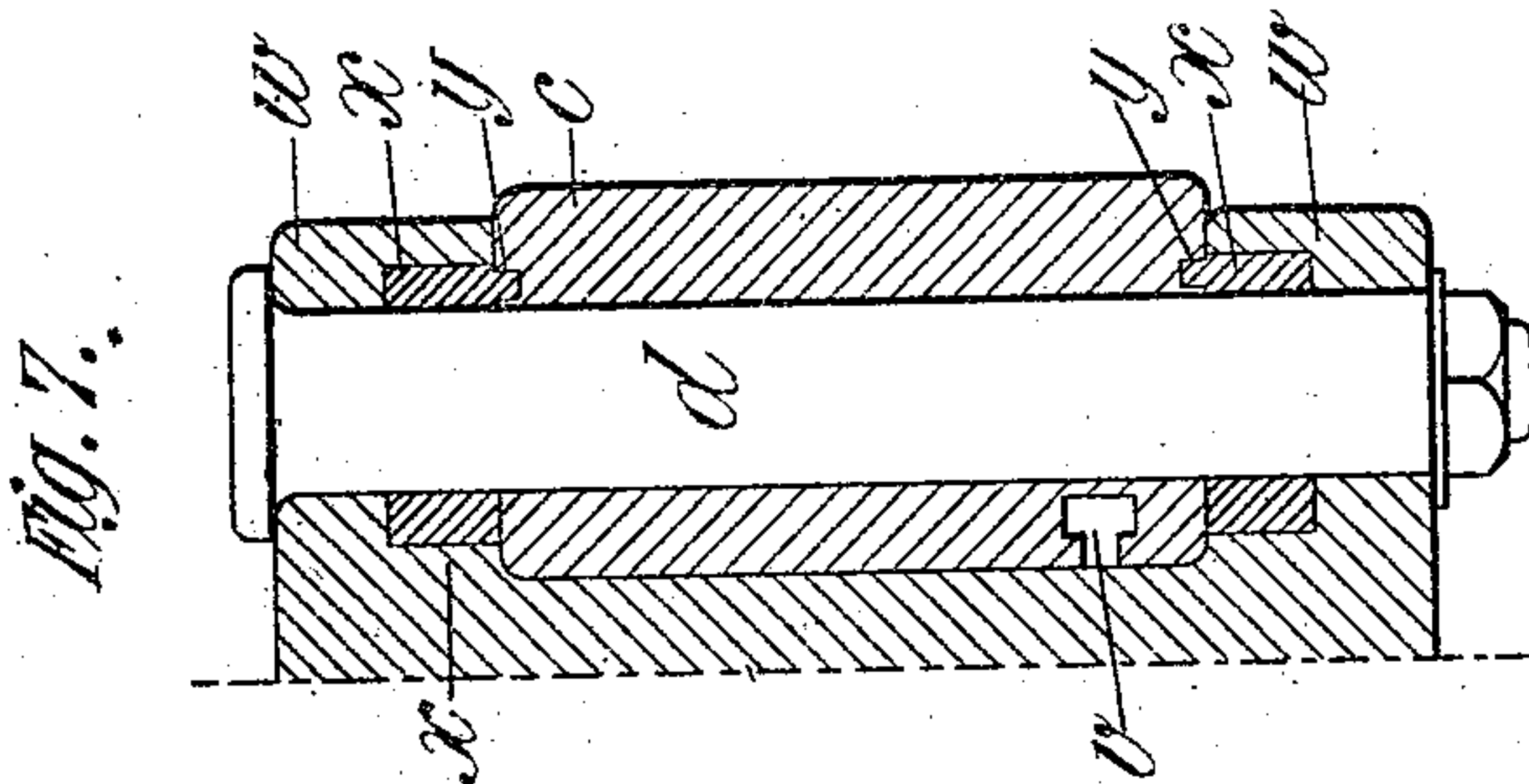
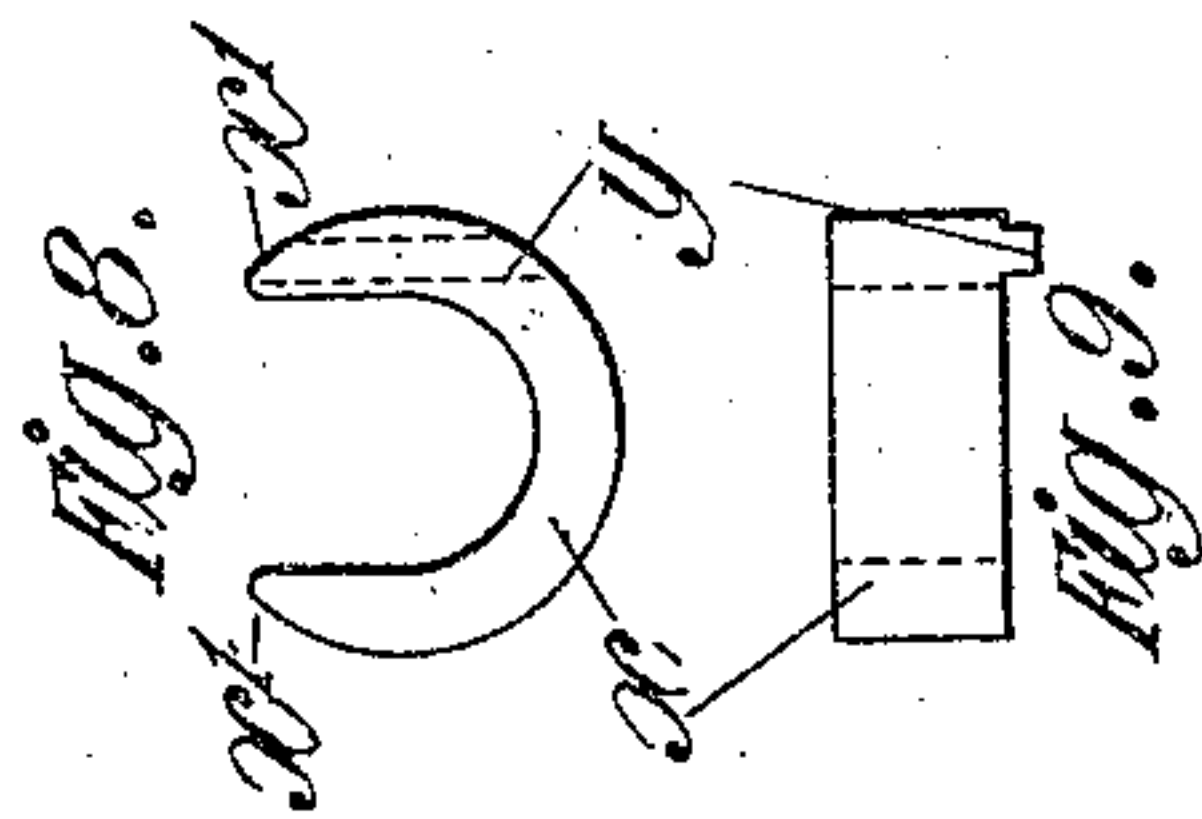
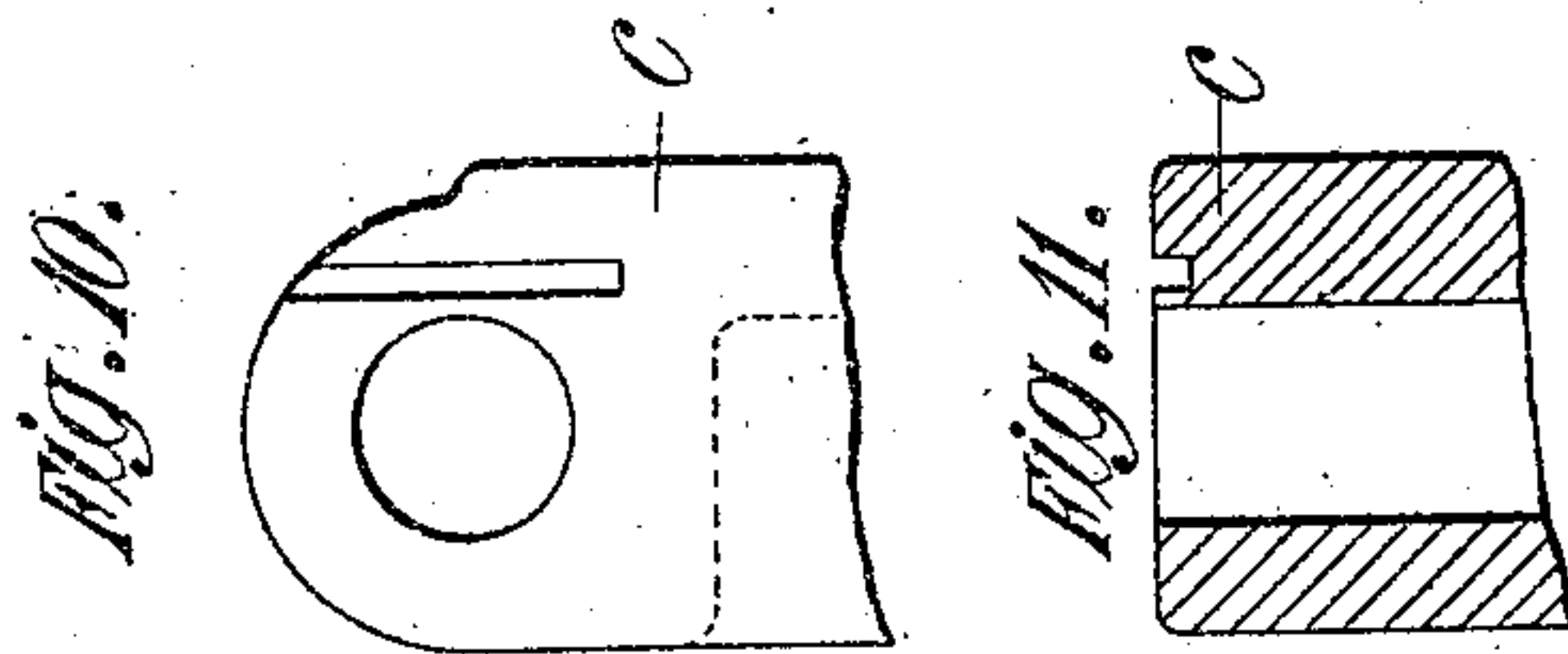
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4 Sheets—Sheet 4.



Witnesses
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UNITED STATES PATENT OFFICE.

CARL HOLMSTRÖM, OF GLASGOW, SCOTLAND.

BREECH MECHANISM FOR GUNS.

SPECIFICATION forming part of Letters Patent No. 715,073, dated December 2, 1902.

Application filed August 23, 1901. Serial No. 73,035. (No model.)

To all whom it may concern:

Be it known that I, CARL HOLMSTRÖM, engineer, a Swedish subject, residing at Park-head Forge, Rolling Mills, and Steel Works, Glasgow, Scotland, have invented certain new and useful Improvements in and Relating to the Breech Mechanism of Guns, of which the following is a specification.

This invention relates to the breech mechanism of guns, and has reference particularly to the class of such mechanism in which a rotary block or plug is mounted in a carrier which can be swung about a pivot or hinge-pin in opening and closing the breech of the gun.

According to my invention I employ a cylindrical block provided with a "de Bange" obturator having a slightly-conical or a cylindrical pad; and my objects are to effect the locking and unlocking of the block without angular or rotative movement about its axis and also to obviate the necessity for cutting away the threads of the block or of its chamber to permit the said block to swing freely out of the said chamber.

In order that my said invention may be clearly understood and readily carried into effect, I will describe the same with reference to the accompanying drawings, in which—

Figures 1 and 2 are horizontal central sections of the breech of a gun with my improvements applied thereto, Fig. 1 representing the breech closed, and Fig. 2 the breech open. Fig. 3 is an end elevation of the breech closed.

Figs. 4 and 5 are detail sections taken on the line 1 1 of Fig. 3. Figs. 6 and 7 are vertical sections of the pivot of the carrier, taken, respectively, on the lines 2 2 and 3 3 of Fig. 1. Figs. 8 and 9 are respectively a plan and a side elevation of a collar that moves with the carrier and operates as hereinafter explained. Figs. 10 and 11 are respectively a plan and a vertical section of the upper part of the carrier detached.

a is the gun; *b*, the breech-block; *c*, the swinging carrier; *d*, its pivot, and *e* the obturator.

f is the rotary bushing of rectangular cross-section, having on its outer circumference a continuous screw-thread engaging with a corresponding thread on the interior of the annular cavity formed for its reception in the

gun. The inner circumference of said rotary bushing *f* is formed with ordinary interrupted screw-threads *g*, with which corresponding threads on the block *b* are adapted to engage when said bushing is angularly shifted. The said block is fixed to the carrier by any suitable means, so as to be integral therewith. In the example illustrated said block is provided with a dovetailed projection *h*, engaging with a corresponding groove in the carrier. The carrier is furnished with a rotary device in the form of a ring *i*, which is connected thereto by studs *j* on the ring entering segmental grooves *k* in the carrier. This ring is furnished with projections *l l*, which are so arranged as to enter recesses *m m* in the rotary bushing *f* when the carrier is swung into its closed position. The ring *i* is connected, by means of a link *n*, to the hand-lever *o*, which is of the ordinary kind employed for actuating the carrier to open and close the breech. The point of connection of the link *n* to the said ring *i* is such that as the hand-lever *o* is swung outwardly the ring *i* will be caused to shift angularly in the carrier, and thereby correspondingly turn the bushing *f* through the intervention of the projections *l* and recesses *m*. This operation causes the interrupted threads on the bushing *f* to become disengaged from those on the block *b*, and by the continued movement of the hand-lever *o* the carrier will be swung open and the block withdrawn from the gun, as represented in Fig. 2.

In order to retain the ring *i* in the position it has assumed during its angular movement, as aforesaid, it has a recess *p*, with which engages a spring bolt or catch *q* on the carrier. This spring bolt or catch occupies the position represented in Fig. 4 so long as the carrier is in its closed position—that is to say, its nose is pressed against the surface of the gun and keeps the lug *r* of said catch retracted against the resistance of the spring *s*. As the ring *i* is shifted angularly, as aforesaid, to unlock the bushing *f* from the block the recess *p* on said ring *i* arrives opposite the lug *r* of the catch, and as the carrier is swung outwardly the spring *s* pushes out the catch and brings its lug *r* into the said recess *p*, (see Fig. 5,) thereby locking the ring *i* in its shifted position. When the carrier is

swung inwardly, the nose of the catch again comes against the gun, whereby it is pushed in against the resistance of its spring *s*, and its lug *r* is removed from the recess *p*, thereby liberating said ring, so that the latter can perform its angular movement in actuating the bushing *f* to lock the breech-block.

In order to maintain the bushing *f* in the position it assumes when angularly shifted by the said ring *i* in unlocking the block, said bushing is formed in its periphery with a recess or notch *t*, which at the completion of the unlocking movement of the bushing arrives opposite a sliding rod or bar *u*, provided in the wall of the gun. The outer end of this rod or bar is furnished with a stud or studs that engage with a cam or cam-path *v* on the boss of the carrier near the pivot *d*. This cam or cam-path is so shaped that when the carrier is closed, Fig. 1, the sliding rod or bar *u* is pulled toward the said pivot *d* and its outer end withdrawn into a position of disengagement with the said notch *t* in the bushing *f*. When, however, the said carrier is swung open, Fig. 2, the cam or cam-path operates to push the rod or bar into engagement with the said notch *t*, and thus lock the bushing in its angularly-shifted position.

For the purpose of enabling the carrier to move with its block in a rectilinear course parallel with the axis of the gun during the time that the bushing is angularly shifted in unlocking and locking the block the brackets *w w* on the gun are formed with elongated holes to receive the pivot-pin *d*. The upper and lower portions of the carrier are provided with collars *xx*, connected therewith by ribs *y*, entering corresponding grooves in the carrier. These collars have horns *x' x'*, which when the said pivot has shifted in its elongated holes and the carrier is being swung assume a transverse position relatively to the said elongated holes and act as stop-pieces to prevent the said carrier from shifting or shaking about its pivotal axis. (See Fig. 2.)

The hand-lever *o* is, as already stated, of the well-known construction and operates to swing the carrier to and fro about its hinge in the usual manner. It therefore needs no further description.

The rectilinear movement of the block during the locking and unlocking movement of the bushing, enables the block and its carrier to assume such a position relatively to the breech of the gun that the obturator *e* will be withdrawn far enough to enable it to be swung out of the breech, together with the block. The extent of this rectilinear movement of the block can be augmented by increasing the angle of the interrupted threads *g* of the said bushing and the block relatively to the continuous threads on the exterior of the said bushing.

In some cases I may split or divide the afore-said bushing *f* in one or more places to reduce friction when the bushing is turned.

Any ordinary electrical or percussion mechanism may be employed for firing the gun.

I am aware that it has before been proposed to employ a block which is non-rotatably mounted in the swinging carrier and to lock and unlock such block by the angular movement of a ring or bushing; but in such cases the block has been tapered and not cylindrical and has not been provided with an obturator of the de Bange type. Consequently the difficulty of swinging the block and its obturator from the breech without cutting away the threads to permit of such swinging did not arise. Moreover, the block was not formed with screw-threads, but with concentric fillets or ribs moving rectilinearly in the rotary ring or bushing, as in the case in the construction I have above set forth.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In breech mechanism for guns, the combination with a swinging carrier and means for actuating it, of a cylindrical block provided with a de Bange obturator and non-rotatably mounted on the carrier, and having interrupted threads on its exterior of a rotary bushing having its interior and exterior surfaces parallel, of interrupted threads on the interior of said bushing, and continuous threads on the exterior to engage with corresponding threads of the gun, said threads on the interior and exterior surfaces of the bushing being of opposite hand, of a rotary device on the carrier adapted to engage with said rotary bushing when the carrier is swung inward, and of means for angularly shifting said rotary device and through it the rotary bushing so that the block will be moved rectilinearly in said bushing substantially as and for the purpose specified.

2. In breech mechanism for guns, the combination with a swinging carrier and means for actuating it, of a cylindrical block provided with a de Bange obturator and non-rotatably mounted on the carrier and having interrupted threads on its exterior, of a rotary bushing having its interior and exterior surfaces parallel, of interrupted threads on the interior of said bushing, and continuous threads on the exterior to engage with corresponding threads on the gun, said threads on the interior and exterior surfaces of the bushing being of opposite hand, of a rotary ring on the carrier provided with lugs for engaging with recesses in said rotary bushing when the carrier is swung inward, of means for retaining the said bushing and ring in their shifted position while the breech is open and of means for enabling the carrier to move rectilinearly with the block during the locking and unlocking of the latter and its rectilinear movement in the bushing, substantially as described.

3. In breech mechanism for guns, the combination with the swinging carrier, the means for swinging it, the cylindrical non-rotary

block having a de Bange obturator, the screw-threaded bushing having its interior and exterior surfaces parallel and provided with threads of opposite hand, and the rotary ring on the carrier for angularly shifting said bushing, of a spring-catch on the carrier for engaging with a recess in the rotary ring of the carrier, of a sliding rod in the gun for engaging with a notch in the rotary bushing and of a cam on the carrier near its pivot for actuating said sliding rod substantially as described.

4. In breech mechanism for guns, the combination with the swinging carrier, and means for swinging it, the cylindrical non-rotary block having a de Bange obturator, the rotary bushing having its interior and exterior surfaces parallel and provided with threads of opposite hand, and the rotary ring on the carrier for angularly shifting said bushing; of brackets on the gun for supporting the carrier, said brackets being formed with elongated holes for the pivot-pin of the carrier, to permit of the latter participating in a rectilinear movement with the block during the

locking and unlocking of the latter substantially as described.

5. In breech mechanism for guns, the combination with the swinging carrier, the means for swinging it, the cylindrical non-rotary block having a de Bange obturator, the rotary bushing having its interior and exterior surfaces parallel and provided with threads of opposite hand, and the rotary ring on the carrier; of brackets on the gun for supporting the carrier, said brackets being formed with elongated holes for the pivot-pin of the carrier to work in, of collars on said carrier and of horns on said collars adapted to assume a transverse position relatively to the elongated holes during the swinging of the carrier and to thereby prevent looseness of the pivot, substantially as described.

In testimony whereof I have hereunto set my hand, in presence of two subscribing witnesses, this 8th day of July, 1901.

CARL HOLMSTRÖM.

Witnesses:

JNO. MCFADZEAN,

J. L. J. HALL.